

IN THE CLAIMS

1. (currently amended) Measurement cell for an injection machine, the measurement cell comprising:

a cavity between two removable and exchangeable internal metallic blocks ~~equipped~~ with each having a cooling and heating system and being isolated from bodies that hold the blocks by both a space and polymeric bars to generate a one-dimensional heat transfer regime ~~on the~~ for a central zone of a plate of material to be analyzed;

a set of fixed pressure and temperature sensors on the bodies for connection to a data acquisition system to store signals therefrom; and

a removable and reusable unit of at least three temperature sensors for connection to the data acquisition system, the temperature sensors being in ceramic or metallic tubes in a supporting block to guide and fix the unit at the cavity .

2. (previously presented) Measurement cell according to claim 1, wherein the removable and exchangeable internal metallic blocks have a thermal conductivity higher than 100 times that of the material to be analyzed .

3. - 4. (canceled)

5. (previously presented) Measurement cell according to claim 1, wherein the space is at least 1mm thick.

6. (canceled)

7. (previously presented) Measurement cell according to claim 1, and further comprising a chamber between the metallic blocks that produces a flat flow front of the material to be analyzed as being fed into the cavity.

8. (previously presented) Measurement cell according to claim 1, wherein the chamber has a minimum depth of 2.5 times a thickness of the cavity .

9. (canceled)

10. (previously presented) Measurement cell according to claim 1, wherein a distance of the temperature sensors from a face of the unit closest to the cavity varies less than 0.5%.

11. (previously presented) Measurement cell according to claim 1, characterized because the removable unit of temperature sensors is reusable for other measurements.

12. (previously presented) Measurement cell according to claim 1, characterized because the removable unit of temperature sensors allows to replace the temperature sensors in case these are damaged.

13.- 14. (canceled)

15. (previously presented) Measurement cell according to claim 1, wherein the ceramic or metallic tubes have an external diameter in a zone at the temperature sensors not above 2.4 times the diameter of the temperature sensors.

16. (previously presented) Measurement cell according to claim 1, characterized because the removable unit of temperature sensors possesses ceramic or metallic tubes assembled in a carrier block manufactured in a polymeric or ceramic material with enough mechanical resistance to support the pressure during the usage of the measurement cell.

17. (previously presented) Measurement cell according to claim 1, wherein the removable unit of temperatures sensors possesses ceramic or metallic tubes supported on integrated or removable bodies made of ceramic, polymeric or wood material whose resistance to compression is above minimum 2 times the maximum compression effort generated during the closing of the measurement cell.

18. (previously presented) Measurement cell according to claim 9 characterized because the removable unit of temperature sensors possesses ceramic or metallic tubes that can be supported on integrated bodies made of ceramic or polymeric material whose height is higher than the cavity's height without exceeding it by 1% and whose thickness is not above 1.5mm.

19. (currently amended) Measurement cell according to claim 1, wherein lengths of the ceramic or metallic tubes inside the ~~cavity~~ blocks is not below 40 times the diameter of the temperature sensors.

20. - 24. (canceled)

25. (currently amended) A measurement cell for measuring thermal diffusivity of materials, ~~such as thermoplastic polymers~~, during a non stationary heat transfer process, that can be installed, opened and firmly closed in an injection molding machine comprising:

a ~~rectangular~~ flat and narrow cavity ~~in form of a plate to be filled with~~ for a said material whose thermal diffusivity is to be measured;

two removable and exchangeable metallic blocks that form ~~the~~ two rectangular and opposite big faces of said cavity, equipped with a cooling and a heating system that guarantee ~~the~~ a one dimensional heat flow in said cavity ~~separated laterally from mold's frames~~ by the presence of an isolating film of air;

two polymeric bars forming two opposite narrow faces of said cavity that restrict the transversal heat flow in said cavity;

a removable unit of temperature sensors located at ~~the~~ a third, narrow face of said cavity, made of an isolating material that has ceramic or metallic small tubes embedded in a supporting block to guide and fix a group of temperature sensors extended into the central zone of said cavity connected to a data acquisition system to store their temperature signals; said tubes are fixed by small ribs of said supporting block or by removable and reusable fixing elements that hold the temperature sensors in their exact position inside said cavity;

a chamber ~~formed between the two mold's frames~~, coupled with ~~the~~ said cavity to its a fourth, narrow lateral face;

two pressure sensors, one located in said cavity and the second one in said chamber, connected to said data acquisition system to store their pressure signals; and

two temperature sensors lying on the two **big** rectangular and opposite big faces of said cavity.

26. (previously presented) The measurement cell of claim 25 in which the said two removable and exchangeable metallic blocks have drilled through holes parallel to the surfaces forming the two big flat faces of said cavity, where the holes closest to the said cavity faces are for the flow of a cooling liquid, and those far away from the cavity faces are for conventional high watt density cartridge heaters.

27. (previously presented) The measurement cell of claim 25 in which one of the said two removable and exchangeable metallic blocks has a mini pressure sensor of a diameter no larger than 2.5 mm installed and located on the central zone of said cavity, where the material temperature is measured.

28. (currently amended) The measurement cell of claim 25 in which the said two ~~removable~~ polymeric material bars are removable and made of a polymer that does not melt at the maximum temperature of said heat transfer process.

29. (previously presented) The measurement cell of claim 25 in which said removable unit of temperature sensors can be easily fixed and exactly installed on the third narrow face of said cavity.

30. (currently amended) The measurement cell of claim 25 in which said removable and reusable unit of temperature sensors has temperature sensors exactly and stable positioned in pre-established distances from the closest face of said cavity and parallel to it with an accuracy below 0.5% of the said distance during the entire time of said heat transfer process

31. (previously presented) The measurement cell of claim 25 in which said removable unit of temperature sensors allows the installation of minimum three temperature sensors.

32. (previously presented) The measurement cell of claim 25 in which said removable unit of temperature sensors has small cylindrical or conical ceramic or metallic tubes to guide the said temperature sensors.

33. (previously presented) The measurement cell of claim 25 in which the said supporting block of said removable unit of temperature sensors is manufactured in a polymeric or ceramic material with enough mechanical resistance to support the internal cavity pressure during the said measurement.

34. (previously presented) The measurement cell of claim 25 in which said ceramic or metallic tubes are fixed by small ribs of said supporting block or by removable and reusable fixing elements made of ceramic, polymeric or wood with a compression resistance of minimum 2 times the maximum compression stress generated when said measurement cell is closed.

35. (previously presented) The measurement cell of claim 25 in which the height of said small ribs or removable and reusable fixing elements is up to 1 % higher than the cavity's height and its thickness is not above than 1.5 mm.

36. (canceled)